Mobile bank applications: loyalty of young bank customers

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Abstract

The purpose of this study is to investigate how young bank customers (YBCs) perceive the relationships between several antecedents (i.e., usability, responsiveness, customer satisfaction, and reliability) and loyalty in the context of mobile bank applications (MBAs). An electronic questionnaire was sent to 500 YBCs in Sweden, 146 of whom completed it. Confirmatory factor analysis was used to test the measurement model, and structural equation modeling was used to test the hypotheses. The results indicate that usability is indirectly related to loyalty through responsiveness and customer satisfaction. The study contributes to the literature by developing a usability–loyalty model of YBCs using MBAs. © 2021 Academy of Financial Services. All rights reserved.

JEL classification: M

Keywords: Usability; Customer satisfaction; Loyalty; Mobile bank application; Young bank customers

1. Introduction

Studies in the literature on loyalty in the financial services context have indicated that while bank customers in general are loyal (e.g., Strandberg, Wahlberg, & Öhman, 2015), young bank customers (YBCs) are often not (Nicoletti, 2017). YBCs are twice as likely to change banks as are older bank customers (Accenture, 2015). Although YBCs represent an important customer category for traditional banks (Foscht, Maloles, Schloffer, Chia, & Sinha, 2010), members of this group show a tendency to use financial services provided by FinTech companies. Gomber, Kauffman, Parker, and Weber (2018) state that YBCs seem to

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prefer financial services provided by Google, Amazon, Apple, or Paypal, that is, FinTech companies, rather than by traditional banks. It has also been emphasized that "FinTech companies offer new products and solutions which fulfill customers' needs that have previously not or not sufficiently been addressed by incumbent financial service providers [e.g., traditional banks]." (Gomber, Koch, & Siering, 2017, p. 540).

The ambition of FinTech companies to provide one-fifth of financial services by 2020 (Gimpel, Rau, & Röglinger, 2018) has led to competition between these companies and traditional banks, and YBCs seem to be the target of both these groups. Traditional banks have developed mobile bank applications (MBAs), that is, an advanced type of mobile banking. MBAs allow customers connected to the Internet to conduct various financial tasks, such as checking account balances, transferring money, and paying bills (Malaquias & Hwang, 2019). Simultaneously, the FinTech companies have promoted mobile-only banks (MOBs), a recent innovation that offers financial services to customers connected to the Internet solely via mobile applications (Nourallah, Strandberg, & Öhman, 2019).

One place where this rivalry between FinTech companies and banks is found is Sweden. In 2018, the first MOB, N26 launched mobile financial services, and in 2019, another MOB, Lunar Way announced that every month roughly 6,000 new customers subscribed to their services (Lundell, 2019).

The literature identifies several research gaps concerning the various antecedents of loyalty applicable to MBAs based on the perceptions of YBCs. In their review of the loyalty literature, Kandampully, Zhang, and Bilgihan (2015) highlight the mobile loyalty of the young generation as a future research area. In another review of the mobile banking literature, Tam and Oliveira (2017, p. 1060) state that "knowing the determinants of the postadoption phase, and keeping customers loyal to m-banking are the emerging issues that should be considered in future research." Larsson and Viitaoja (2017) emphasize the need to investigate how usability affects loyalty. Another research area was summarized by Chakraborty and Sengupta (2013), who discuss the need to study the relationship between customer satisfaction and loyalty in the MBA context. Iberahim, Taufik, Adzmir, and Saharuddin (2016) investigate reliability and responsiveness in the automated teller machine (ATM) context, and suggest considering these concepts in other contexts as well. Addressing these research gaps, the current study investigates how YBCs perceive the relationships between a number of antecedents (i.e., usability, responsiveness, customer satisfaction, and reliability) and loyalty in the context of MBAs.

The structure of the rest of the article is as follows: the next section presents the frame of reference; section three concerns methodological issues; section four presents the results; and section five concludes the article.

2. Frame of reference and hypothesis development

2.1. The context of the study

2.1.1. Mobile financial services

Shaikh and Karjaluoto (2019) argue that mobile financial services can be divided into mobile banking, mobile payments, and mobile money. The first two types of mobile financial

services are found in more inclusive financial systems, for example, in Sweden, and are conducted with more inclusive customer segments, that is, customers who have access to banking services. The third service represents a relationship between a mobile money solution, such as M-Pesa, and nonbank customers. This service is common in less inclusive financial systems, for example, in Sub-Saharan Africa (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018), and in less inclusive customer segments, that is, customers who face difficulties (e.g., long distance) in accessing banking services.

Shaikh and Karjaluoto (2019) examine the landscape of mobile financial services, giving insight into the types of relationships between more or less inclusive financial systems and more or less inclusive customer segments. However, they do not differentiate between the types of financial institutions that offer mobile financial services, that is, traditional banks and FinTech companies. Shaikh and Karjaluoto (2019) use mobile banking to refer to various types of mobile financial services, including mobile banking provided by traditional banks. Because mobile banking does not represent a homogeneous type, it can be divided into services provided by wireless application protocol (WAP), short message service (SMS), and MBAs.

It is worth noting that WAP and SMS banking represent earlier versions of mobile banking in which bank customers access their bank accounts via either a mobile Internet browser or SMS. These rudimentary types of mobile banking prompted remarkable customer aversion. For example, during the 2003–2006 period, 15 German banks stopped offering such services to customers due to lack of use (Scornavacca & Hoehle, 2007).[1] In South Korea, only 4% of online customers adopted these earlier versions of mobile banking in that period (Lee, Park, Chung, and Blakeney, 2012). Moreover, "in 2003 ... less than 1% of banking transactions in Taiwan were conducted through mobile handsets" (Luarn & Lin, 2005, p. 874). Similar situations existed in Finland (Suoranta & Mattila, 2004), China (Laforet & Li, 2005), and the United States (Mallat, Rossi, & Tuunainen, 2004).

Earlier versions of mobile banking were not as widespread as expected (Koenig-Lewis, Palmer, & Moll, 2010; Mohammadi, 2015; Shaikh & Karjaluoto, 2015). Mobile banking system limitations, such as tiny screens and keypads and slower transaction speeds, caused this aversion (Laukkanen, 2007; Lee & Chung, 2009). However, since 2007—after the first iPhone was launched (Shaikh & Karjaluoto, 2019)—the situation changed dramatically and MBAs have become a basic means of conducting daily financial transactions such as checking balances, transferring money, and paying bills (Liébana-Cabanillas, Alonso-Dos-Santos, Soto-Fuentes, & Valderrama-Palma, 2017; Tan & Lau, 2016). This change likely emerged due to greater accessibility to the Internet (Lu, Tzeng, Cheng, & Hsu, 2015), advanced generations of smartphones (Shaikh & Karjaluoto, 2015), and the development of application technology (Sun, Wang, & Wang, 2015).

2.1.2. Young bank customers

Young customers are more enthusiastic about using their mobile phones than are members of other age groups (Yeh, Wang, & Yieh, 2016), and they have advanced skills in dealing with various technological financial platforms (Killins, 2017). They also spend

significant amounts of time using these platforms (Kaur & Medury, 2011). It is worth noting that reaching YBCs is a top priority for banks (Tan & Lau, 2016).

Recent studies recommend investigating bank customers, such as YBCs, who possess limited financial information (Aydin & Akben Selcuk, 2019). Moreover, YBCs will seek home mortgages and other financial services in the near future, so it is important for banks to secure loyal YBCs, given that FinTech companies will be the main providers of financial services (Gimpel et al., 2018) and that these companies can satisfy customers in other and possibly better ways than can traditional banks (Gomber et al., 2017). YBCs can contribute to increased bank profits in terms of immediate profits, future profitability, market share, and diverse profitable relationships (Foscht et al., 2010).

The literature reveals that different terms have been used interchangeably to refer to YBCs: the millennial generation (e.g., Tan & Lau, 2016), the young generation (e.g., Koenig-Lewis et al., 2010), and generation Y (Killins, 2017). Also, previous studies have used different age groups when investigating YBCs. Calisir and Gumussoy (2008) use the 18–26-year age range, Sum Chau and Ngai (2010) 16–29 years, and Akturan and Tezcan (2012) 16–25 years. In this study, YBCs are bank customers aged 18–29 years, that is, the interval from first being considered "adult" in Sweden to the highest year considered in the three studies mentioned above.

2.2. Conceptual framework

2.2.1. Central concepts

Electronic financial services refer to accessing a bank account via computers and/or mobile financial services (Shaikh & Karjaluoto, 2019). In this context, studies have addressed responsiveness and reliability (Broderick & Vachirapornpuk, 2002), customer satisfaction (Sampaio, Ladeira, & Santini, 2017), and loyalty (Larsson & Viitaoja, 2017). Overall, studies report that customer satisfaction and loyalty are the most important factors delivering a good experience (Berraies, Yahia, & Hannachi, 2017), while reliability is identified as a necessary risk-related factor in technology-based financial services (Hanafizadeh, Behboudi, Koshksaray, & Tabar, 2014). In a similar vein, Sindwani and Goel (2015) argue that responsiveness is an important concept in the electronic financial services context.

A number of previous studies have addressed usability-related issues (e.g., Mohammadi, 2015). The International Organization for Standardization (IOS, 1998) defines usability as "the extent to which a product can be used by specified users to achieve specified goals." Kang, Lee, and Lee (2012) state that MBA usability likely concerns mobile interface and navigation issues. Casaló, Flavian, and Guinalíu (2007, 2008) and Flavian, Guinalíu, and Gurrea (2006) find that in the banking industry, the essence of usability is represented by ease of understanding, observed content, simplicity, speed, ease of site navigation, and user control.

From an electronic financial services perspective, customer satisfaction is created by meeting customer expectations regarding financial issues (Amin, 2016), while loyalty is seen as a dichotomy between attitude and behavior. Attitudinal loyalty includes "a degree of

dispositional commitment, in terms of some unique value associated with the brand" (Lin & Wang, 2006, p. 272), and behavioral loyalty refers to a customer's repurchase behavior, due to their liking for particular financial services (Amin, 2016).

It is worth mentioning that most previous studies of service quality have used the SERVQUAL instrument (Parasuraman, Zeithaml, & Berry, 1988), which consists of five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The current study excludes three of these dimensions: tangibles, assurance, and empathy. Parasuraman et al. (1998, p. 23) state that tangibles are "physical facilities, equipment, and appearance of personnel," assurance is the "knowledge and courtesy of employees and their ability to inspire trust and confidence," and empathy is "caring, individualized attention the firm provides its customers." It can be argued that these dimensions are related to the customer–employee relationship dimension, which is not part of the MBA context. Hence, the current study only uses the responsiveness and reliability dimensions of service quality, since MBAs have evolved in an environment in which the nature of mobile–human interaction differs from personal interaction (Oliveira, Thomas, Baptista, & Campos, 2016), and because YBCs do not prefer personal connections when accessing banking services (Carlander, Gamble, Gärling, Hauff, Johansson, & Holmen, 2018). In this regard, responsiveness is the willingness to help consumers and provide prompt service (Parasuraman et al., 1988), and in terms of MBAs, it has two components: service speed and technology (Iberahim et al., 2016). Reliability is defined as "the ability to perform the promised service dependably and accurately" (Parasuraman et al., 1988, p. 23). The current study adopts these definitions.

2.2.2. The research model and hypotheses

The research model is presented in Fig. 1 As can be seen, the literature suggests that usability is related to responsiveness, customer satisfaction, and reliability, as indicated by H1, H2, and H3. Subsequently, responsiveness and reliability are related to customer satisfaction, as indicated by H4 and H5. Finally, these three concepts are related to loyalty, as indicated by H6, H7, and H8. The eight hypotheses are developed below.

In the banking sector, usability will likely enhance speed, ease site navigation, and increase user control (Casaló et al., 2007, 2008; Flavian et al., 2006). Usability can offer various benefits to customers (Calisir & Gumussoy, 2008), such as the ability to get banking help in various critical situations (Gumussoy, 2016), to access a user-friendly system (Hussien & Aziz, 2013), and to use a variety of communication channels (Laukkanen, 2007). Offering a high level of usability will likely lead to good responsiveness (Raza, Jawaid, & Hassan, 2015). Accordingly, this study proposes the following hypothesis in the MBA context:

Hypothesis 1 (H1):   The higher the usability, the higher the responsiveness is likely to be.

Generally, usability can lead to a pleasant user experience (Nielsen, 1994), affect customer expectations (Bhattacherjee, 2001), and ensure customer satisfaction. Theoretical arguments and empirical results have emphasized the importance of usability for customer decisions to use certain technological applications (e.g., Hoehle & Venkatesh, 2015). In the online banking context, empirical results indicate that usability can significantly affect
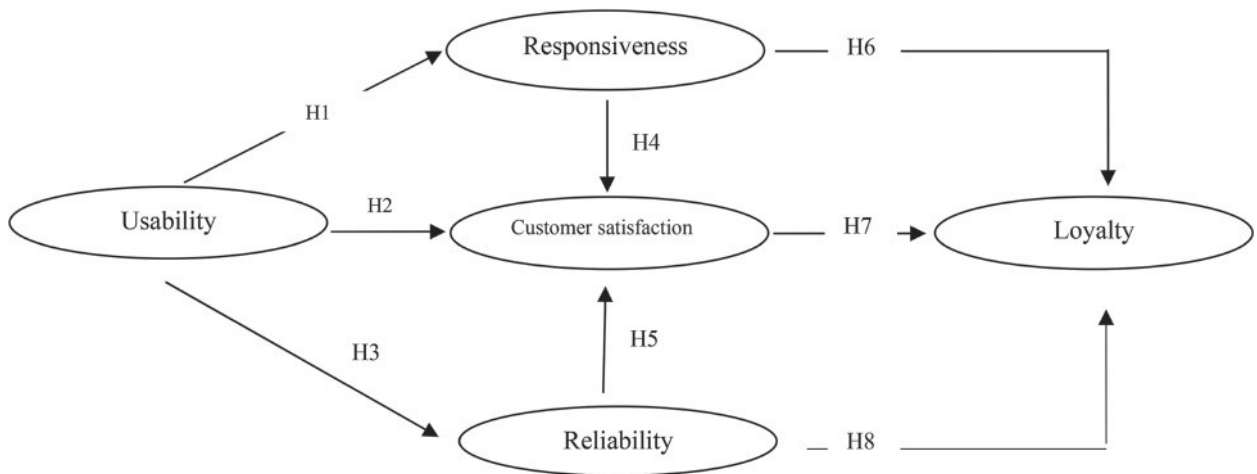
Fig. 1. Research model.

customer satisfaction (Casaló et al., 2008; Flavian et al., 2006; Hussien & Aziz, 2013). Similarly, Thakur (2014), when studying MBAs in India, finds that usability affects customer satisfaction. The following hypothesis is accordingly formulated:

Hypothesis 2 (H2):   The higher the usability, the higher the customer satisfaction is likely to be.

Usability is also considered a key factor in e-business success (Lee & Kozar, 2012), and high usability ensures fewer difficulties in using a certain system (Davis, 1989), promotes ease of use of that system (Nielsen, 1994), and reduces possible errors (Sanchez-Franco & Rondan-Cataluña, 2010). In contrast, low usability generates payment-related issues (Flavian et al., 2006). Since high MBA usability ensures trustworthy financial services in terms of transferring money, obtaining account information, and paying bills (Mohammadi, 2015), it can be argued that usability drives reliability (cf. Benlian & Hess, 2011). Hence, it is hypothesized that:

Hypothesis 3 (H3):   The higher the usability, the higher the reliability is likely to be.

Responsiveness is the ability to provide help and instant services to customers, that is, provide fast replies regarding their bank accounts (Raza et al., 2015), in turn increasing the customer satisfaction (Iberahim et al., 2016). Previous studies in the banking sector have presented contrasting observations about this relationship. While Raza et al. (2015) and Saleem, Zahra, Ahmad, and Ismail (2016) state that there is a significant relationship between responsiveness and customer satisfaction, other studies (Kassim & Asiah Abdullah, 2010; Munusamy, Chelliah, & Mun, 2010) report contrary results. Based on theoretical assumptions and more recent empirical studies, the current study suggests the following hypothesis:

Hypothesis 4 (H4):   The higher the responsiveness, the higher the customer satisfaction is likely to be.

Bauer, Falk, and Hammerschmidt (2006) conclude that reliability is the most critical factor driving customer satisfaction. In investigating reliability in mobile payment services, Arvidsson (2014) finds that consumers highly rate the importance of reliability. Similarly, Calisir and Gumussoy (2008) emphasize the role of reliability in banking, and Raza et al. (2015) demonstrate that reliability has a considerable effect on customer satisfaction. Munusamy et al. (2010) investigate this relationship in the banking sector in Malaysia and

report no significant relationship, and Wen and Hilmi (2011) find the same lack of relationship in another Malaysian study. Overall, the results reported by most of the above studies lead to the following hypothesis:

Hypothesis 5 (H5):   The higher the reliability, the higher the customer satisfaction is likely to be.

Quick responses to customer questions are seen as a factor leading to customer loyalty (Srinivasan, Anderson, & Ponnavolu, 2002). Loyalty can be ensured by offering a variety of communication channels (Verhoef & Donkers, 2005) and by providing embedded ways to ask for help (Awwad & Awad Neimat, 2010). Previous studies report that responsiveness could well affect loyalty (Marimon, Yaya, & Casadesus Fa, 2012; Moorthy, Chee, Yi, Ying, Woen, & Wei, 2017). In a study of mobile commerce, Lin (2012) finds a significant relationship between responsiveness and loyalty. This leads to the following hypothesis:

Hypothesis 6 (H6):   The higher the responsiveness, the higher the loyalty is likely to be.

Customer satisfaction is an important issue for any company (Santouridis & Trivellas, 2010), and banks are no exception. It explains post-purchase perceived performance (Fornell, 1992) and ensures customer retention and profitability (Strandberg, Wahlberg, & Öhman, 2012). Previous studies report a strong relationship between customer satisfaction and loyalty (Lin & Wang, 2006; Liébana-Cabanillas et al., 2017; Thakur, 2014). Fornell (1992, p. 7) describes this relationship as follows: "Loyal customers are not necessarily satisfied customers, but satisfied customers tend to be loyal customers." The current study emphasizes this relationship, and formulates the following hypothesis:

Hypothesis 7 (H7):   The higher the customer satisfaction, the higher the loyalty is likely to be.

Reliability enhances the ability of MBAs to perform the promised customer services dependably and accurately (Jun & Palacios, 2016). Previous studies have investigated reliability as a dimension of service quality, and empirical results support the relationship between reliability and loyalty (e.g., Karatepe, 2011). Other studies of reliability have reached similar conclusions. Ho and Lee (2007) suggest that reliability is a crucial factor for retaining customers, and Moorthy et al. (2017) conclude that reliability is significantly and positively related to loyalty. However, in mobile retailing, Lin (2012) finds no relationship between reliability and loyalty. In a similar vein, Zhou, Lu, and Wang (2010) suggest that reliability might not be as important for YBCs as for older bank customers. Nevertheless, the following hypothesis is based on most previous research:

Hypothesis 8 (H8):   The higher the reliability, the higher the loyalty is likely to be.

3. Method

3.1. Measure development

The items in the preliminary questionnaire were adopted from previous studies to ensure content validity (see the Appendix). Usability was measured by items (Usa 1–5) from

Casaló et al. (2008). Responsiveness items (Res 1–3) and reliability items (Rel 1–3) were adopted from Lin (2013). Customer satisfaction items (Sat 1–2) were adopted from Aydin and Özer (2005) and Yoon (2010), and loyalty items (Loy 1–2) from Chaudhuri and Holbrook (2001) and Wirtz, Mattila, and Lwin (2007). Two focus group interviews were conducted with four and five YBCs, respectively. All participants belonged to the target age group, that is, 18–29 years, and had at least one year's experience of MBA use in Sweden. The focus group interviews contributed to the detailed improvement of some items in the preliminary questionnaire. Back translation was conducted to ensure that the items had good consistency (cf. Brislin, 1970), and certain language-related revisions were made as a result. The last step was to send the preliminary questionnaire to two experienced YBCs to check for readability, and minor revisions were made based on their feedback. The final questionnaire was based on a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. The background variables included were age, gender, and MBA experience.

3.2. Sample, data collection, and data analysis procedures

The final questionnaire was sent in electronic form to 500 students at a university in the Mid-Sweden region in late 2018. These students studied business administration, political science, or sociology, were aged 18–29 years, and differed in the MBA usage duration and the number of MBAs used. In addition, the students were diverse in terms of socioeconomic class, gender, and cultural background. The main criterion for selecting these students was use of MBAs for at least one year, which requires a Swedish bank account. Sampling university students enabled the current study to avoid limitations related to a sample associated with a single bank (e.g., Strandberg et al., 2012), because the present respondents were customers of several banks.

Harm to participants, confidentiality of information provided, confidentiality of collected data, and data-storage issues were among the ethical concerns of the current study, and certain processes were used to address these concerns and the general limitations associated with questionnaires (cf. Grinyer, 2009). Approval to send out the questionnaire was obtained from responsible persons at the university program and course levels. Brief information about the study was presented to the students, including advising that completing the questionnaire was voluntary and that financial information would not be gathered for the study. The anonymity of responses was ensured by using online software complying with the EU's General Data Protection Regulation.

Initially, 129 completed questionnaires were received; after two reminders, the total number of completed questionnaires increased to 146, that is, a response rate of 29.2%. Following the suggestion of Pohlmann (2004), an analysis was conducted comparing the results of those responding before and after the first reminder; no notable differences were found between these two groups.

Descriptive statistics, sample adequacy, and common method bias tests were calculated. In a further step, confirmatory factor analysis (CFA) was utilized to test how well the observed variables represent the latent variables (cf. Hair, Black, Babin, & Anderson, 2014). The current study used CFA to delete unnecessary items and refine the measurement model; it was also used to address reliability and validity issues. Subsequently, structural equation

modeling (SEM) was used to test the research model and the hypotheses. Both CFA and SEM were performed using LISREL 9.30.

4. Results

4.1. Descriptive statistics

The characteristics of the sample are presented in the Appendix. Most participants were 18–23 years of age, and the sample was fairly equally distributed in terms of gender. Only a small percentage of participants used more than three MBAs. Regarding usage experience, a large majority had two or more years of MBA experience, and almost half the participants perceived themselves as highly experienced.

4.2. Sample adequacy and common method bias

Exploratory factor analysis was used to assess sample adequacy and common method bias. Kaiser-Meyer-Olkin (KMO; cf. Sharma, 1996) and Harmon's single-factor tests (cf. Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) were conducted. The KMO value was 0.809 (KMO > 0.8), indicating that the sample adequacy is good. Harmon's single-factor test showed that there was no maximum variance explained by a single factor

4.3. Measurement model

The initial results of the measurement model, that is, the model that contains all the items included in the research model, did not meet the suggested thresholds. To refine the model, the suggestions of the modification indices in LISREL 9.30 were applied (cf. Jöreskog & Sörbom, 1993). This resulted in three factors (i.e., Usa 4, Usa 5, and Rel 3) being eliminated. The results of the final measurement model with standardized factor loadings and *t*-values are presented in Fig. 2 Observed variables are represented by rectangles; the standardized factor loading values are indicated before the slashes and the *t*-values after the slashes.

The final measurement model shows that $\chi^2 = 55.07$ (with 44 degrees of freedom). The χ^2/df ratio equals 1.25 ($\chi^2/df > 2$), which is considered a good fit (cf. Jöreskog, Olsson, & Wallentin, 2016). The root mean square error of approximation (RMSEA) is 0.0428 (RMSEA > 0.8), which indicates good fit (cf. Bagozzi & Yi, 1988). The results of the goodness of fit index, normed fit index, non-normed fit index, and comparative fit index were all >0.9, which is the recommended threshold (cf. Jöreskog et al., 2016). Table 1 shows that the overall fit indices of the measurement model meet the recommended values.

CFA was used to measure the reliability, convergent validity, and discriminant validity of the measurement model. The current study uses two tests to assess reliability: (1) squared multiple correlations (SMC), that is, the degree to which the observed variable's variance is
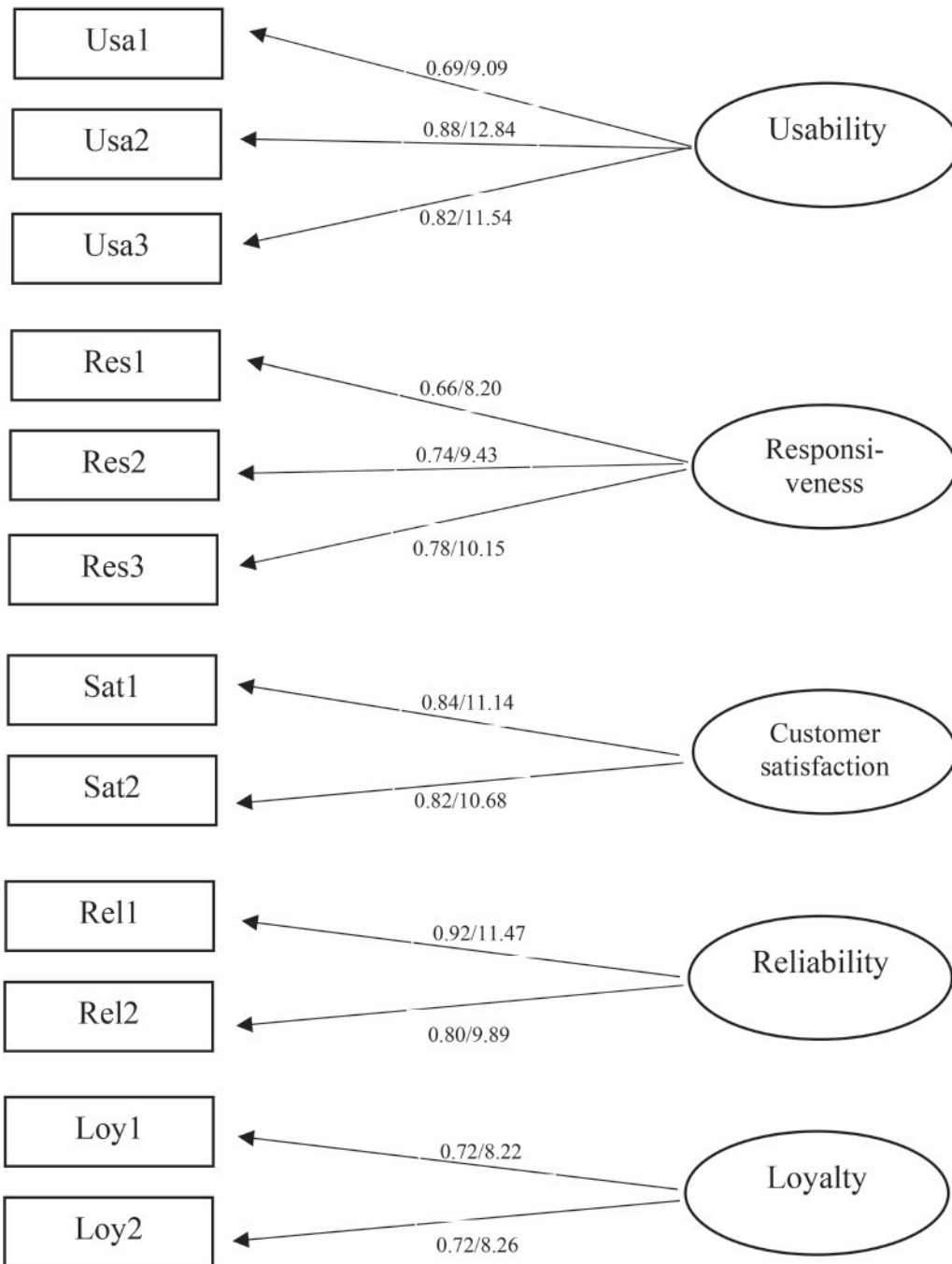
Fig. 2. The results of the measurement model with standardized factor loadings and *t*-values. $\chi^2 = 55.07$, *p*-value = 0.12243, RMSEA = 0.042; RMSEA = root mean square error of approximation.

explained by a latent variable, and (2) composite reliability (CR), to assess the internal consistency (Hair et al., 2014). CR was calculated from the squared sum of factor loadings (L_i) for each latent variable and for the sum of the error variance terms for the latent variables, as shown in Eq. (1). Table 2 shows that the SMCs of all observed variables are higher than 0.5, except for Usa 1 and Res 1, which are below the cutoff value. Table 2 indicates that the CR values are above 0.6 for all latent variables.

Table 1   The fit indices of the measurement model

Fit indices	Result
χ^2/df	1.25
Root mean square error of approximation (RMSEA)	0.042
Goodness of fit index (GFI)	0.942
Normed fit index (NFI)	0.943
Non-normed fit index (NNFI)	0.978
Comparative fit index (CFI)	0.986

$$CR = \frac{\left(\sum_{i=1}^{n} L_i \right)^2}{\left(\sum_{i=1}^{n} L_i \right)^2 + \left(\sum_{i=1}^{n} e_i \right)} \tag{1}$$

To assess convergent validity, this study used the average variance extracted (AVE), standardized factor loadings, and *t*-values. AVE was computed from the mean variance of the item loadings on a latent variable, as shown in Eq. (2):

$$AVE = \frac{\sum_{i=1}^{n} L_i^2}{n} \tag{2}$$

In Table 2, the computations indicate that AVE is above 0.5 and that all standardized factor loadings exceed 0.6 (cf. Hair et al., 2014). All the *t*-values are significant.

To assess discriminant validity, a confidence interval of ± 2 standard errors around the standardized correlations between latent variables was calculated based on LISREL output (cf. Hansen, Samuelsen, & Sallis, 2013). The calculations indicated that the confidence interval was within the acceptable range, that is, not more than 1 or less than –1.

The measurement purification was confirmed by the good results of assessing the goodness of fit (cf. Jöreskog et al., 2016) and by the reliability and validity of the variables (cf. Fornell & Larcker, 1981). Overall, it can be assumed that the reliability (cf. Bagozzi & Yi, 1988; Hair et al., 2014), convergent validity, and discriminant validity are good (cf. Fornell & Larcker, 1981).

4.4. Testing the research model

SEM was performed using LISREL 9.30 (using maximum likelihood and covariance matrices) to test whether the empirical data support the research model. All fit indices correspond to the recommended values (cf. Jöreskog et al., 2016). The calculations indicate that there are five significant relationships ($p < .01$), while three hypotheses are not supported.

Table 2 Standardized factor loading, *t*-value, SMC, AVE, and CR for the measurement model

Latent variables	Observed variables	Standardized factor loading	*t*-value	SMC	AVE	CR
Usability	Usa 1	0.69	9.09	0.48	0.64	0.84
	Usa 2	0.88	12.84	0.78		
	Usa 3	0.82	11.54	0.68		
Responsiveness	Res 1	0.66	8.20	0.44	0.74	0.85
	Res 2	0.74	9.43	0.55		
	Res 3	0.78	10.15	0.62		
Customer satisfaction	Sat 1	0.84	11.14	0.72	0.69	0.82
	Sat 2	0.82	10.68	0.63		
Reliability	Rel 1	0.92	11.47	0.84	0.53	0.77
	Rel 2	0.80	9.89	0.64		
Loyalty	Loy 1	0.72	8.22	0.51	0.52	0.68
	Loy 2	0.72	8.26	0.53		

Note: SMC = squared multiple correlations; AVE = average variance extended; CR = composite reliability.

Table 3 presents the standardized loadings, *t*-values, hypothesis outcomes, and fit indices of the model.

The structural model shows that usability is directly related to responsiveness (in line with H1) and customer satisfaction (in line with H2), and that responsiveness and customer satisfaction are directly related to loyalty (in line with H6 and H7, respectively). In this sense, an indirect relationship appears between usability and loyalty (see Fig. 3).

It should be mentioned that there is a direct relationship between usability and reliability (in line with H3), but not between reliability and loyalty (in contrast to H8). In contrast to H4, there is no relationship between responsiveness and customer satisfaction, and in contrast to H5, there is no relationship between reliability and customer satisfaction.

Table 3 Structural model results

Hypothesis		Standardized loading	*t*-Value	Outcome
H1	Usability → Responsiveness	0.70	6.26*	Supported
H2	Usability → Customer satisfaction	0.49	3.22*	Supported
H3	Usability → Reliability	0.58	6.49*	Supported
H4	Responsiveness → Customer satisfaction	0.13	0.98	Not supported
H5	Reliability → Customer satisfaction	0.16	1.57	Not supported
H6	Responsiveness → Loyalty	0.44	3.27*	Supported
H7	Customer satisfaction → Loyalty	0.37	2.77*	Supported
H8	Reliability → Loyalty	0.37	0.28	Not supported
$\chi^2/df = 1.21$, RMSEA = 0.038, $p = .15$, GFI = 0.942, NFI = 0.933, NNFI = 0.982, CFI = 0.987				

Note: RMSEA = root mean square error of approximation; GFI = goodness of fit index; NFI = normed fit index; NNFI = non-normed fit index; CFI = comparative fit index.
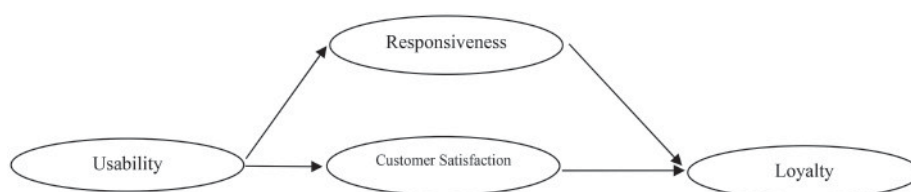
*p-value < 0.01.

Fig. 3. Usability–loyalty model of young bank customers (YBCs) on mobile bank applications (MBAs).

5. Discussion

5.1. Conclusion

This study investigates how YBCs perceive the relationships between the usability, responsiveness, customer satisfaction, and reliability antecedents and loyalty in the context of MBAs. Based on the empirical results, it can be argued that usability has a direct relationship with responsiveness, customer satisfaction, and reliability and an indirect relationship with loyalty via responsiveness and customer satisfaction. The finding that usability has an indirect relationship with loyalty through customer satisfaction is in line with the findings of Casaló et al. (2008) and Flavian et al. (2006).

Responsiveness is significantly related to loyalty, but not to customer satisfaction. The latter finding was not as hypothesized, but is in line with the findings of Kassim and Asiah Abdullah (2010) and Munusamy et al. (2010). These results draw attention to the argument of Fornell (1992, p. 7) that "loyal customers are not necessarily satisfied customers." As a consequence, the lack of relationship between responsiveness and customer satisfaction might cause MBAs to lose YBCs in the long term.

Several previous studies (Arvidsson, 2014; Bauer et al., 2006; Calisir & Gumussoy, 2008; Raza et al., 2015) find a significant relationship between reliability and customer satisfaction. However, as in the studies of Munusamy et al. (2010) and Wen and Hilmi (2011), our empirical results do not significantly support this relationship, calling into question whether reliable MBAs can increase the satisfaction of YBCs. This lack of relationship could be attributable to YBCs' perceptions of reliability in the MBA context, and to YBCs' search for more than just a reliable MBA, for example, a usable one. Previous studies have stressed that reliability might not be as important for YBCs as for older bank customers (Zhou at al., 2010). This also corresponds to our finding that no significant relationship exists between reliability and loyalty, which is in line with the conclusion of Lin (2012), who find the same lack of relationship in mobile retailing. It is also possible that the two dimensions of SERVQUAL used here, that is, responsiveness and reliability, have different roles regarding YBC experience of MBAs.

It was no surprise to find a significant relationship between customer satisfaction and loyalty in the MBA context. The more satisfied YBCs are, the more loyal they could be. It is claimed that YBCs, who will likely be significant for the future of financial services, prefer FinTech companies (Gomber et al., 2018) and tend to change banks more than any other age group (Accenture, 2015). The exclusive offering of financial services in traditional banks will likely weaken due to the attempts of FinTech companies to offer and promote improved

services (Nicoletti, 2017). Therefore, cultivating the loyalty of YBCs is considered a top priority for traditional banks.

5.2. Theoretical and practical implications

The present findings have theoretical as well as practical implications. Compared with previous studies in the banking sector that highlighted service quality as a key to customer satisfaction and loyalty (e.g., Kassim & Asiah Abdullah, 2010; Santouridis & Trivellas, 2010), we argue that in today's digital world, usability can also ensure satisfied and loyal customers. In other words, it can be concluded that the higher the usability a certain MBA offers, the more satisfied YBCs will be. This is of interest because our empirical findings regarding YBCs' perceptions in the MBA context demonstrate that both responsiveness and customer satisfaction are directly related to loyalty.

Usability is a relatively unstudied phenomenon in the financial services context, but the rise of FinTech has drawn attention to investigations of usability-related issues. Previous studies have acknowledged both ease of use and usefulness (Mohammadi, 2015), and financial services studies such as those of Casaló et al. (2007, 2008) and Flavian et al. (2006) suggest that ease of use is likely the proper way to articulate usability. The current study is in line with this suggestion, because ease of use was found to represent a single usability construct.

That banks have made the largest information technology (IT) investments across all industries (Puschmann, 2017) means that IT-related costs represent a significant percentage of bank expenditures. The results of the current study might be used to prioritize such IT investments, especially those related to usability, because three usability attributes were found to be particularly important: it should be (1) easy to use the MBA the first time, (2) easy to find information, and (3) easy to navigate the MBA.

Mobile application technology represents a promising opportunity for traditional banks and FinTech companies, because a mobile application can be an independent financial service provider, for example, an MOB. This is unique compared with the earlier versions of mobile banking. Traditional banks need to take this development into consideration because YBCs can easily move to other types of financial service providers.

5.3. Limitations and future research

Some limitations of this study can be seen as potential areas for future research. The study was conducted in a specific country and the number of responses was limited. It is therefore suggested that cross-cultural studies be conducted in the future, as cultural differences represent a crucial factor in the banking sector, and that more respondents be included. Additional studies are also important because of the general limitations of questionnaire research (cf. Sharma & Sidhu, 2001), including social desirability bias when data are self-reported and the risk of measuring respondents' recalled rather than "lived" perceptions. Another suggestion is accordingly to conduct "big data" studies focusing on text conversations in social media.

Raza et al. (2015) find that reliability is related to customer satisfaction, which was not supported by the current study. A suggested area for future studies would accordingly be to explore additional aspects of reliability in the MBA context. It is also recommended that further studies should cover related issues such as privacy and security.

Notes

1   Including four large private banks: Deutsche Bank, Dresdner Bank, Hypoverein Bank, and Commerzbank.

2   Since some respondents use more than one MBA, the original questionnaire asked those to answer Part II based on their experience on the main MBA they use.

The Appendix: The final questionnaire

Part I. Background including demographic variables			
Variables	Frequency (number)	Frequency (%)	Cumulative (%)
Age			
18–23 years	105	71.9%	71.9%
24–29 years	41	28.1%	100%
Total	146	100%	
Gender			
Male	63	43.1%	43.1%
Female	81	55.5%	98.6%
Prefer not to say	2	1.4%	100%
Total	146	100%	
How many MBAs do you use?			
1	55	37.7%	37.7%
2	42	28.7%	66.4%
3	40	27.4%	93.8%
4 or more	9	6.2%	100%
Total	146	100%	
How long have you used MBAs?			
1 year–under 2 years	14	9.6%	9.6%
2 years–under 3 years	33	22. 6%	32.2%
3 years–under 4 years	35	23.9%	56.1%
4 years or more	64	43.9%	100%
Total	146	100%	

Part II. Usability, responsiveness, customer satisfaction, reliability, and loyalty[2]		
Usability		
Usa 1	It was easy to use the MBA when I used it for the first time.	Casaló et al. (2008)
Usa 2	It is easy to find the information I need from the MBA.	
Usa 3	It is easy to navigate in the MBA.	
Usa 4	It is easy to carry out transactions in the MBA.	
Usa 5	Transactions can be carried out quickly in the MBA.	
Responsiveness		
Res 1	The MBA responds quickly to my questions.	Lin (2013) and
Res 2	The different communication channels in the MBA help me to solve my problems.	Malaquias and Hwang (2019)
Res 3	The MBA provides opportunities to ask for help.	
Customer satisfaction		
Sat 1	The MBA always meets my expectations.	Aydin and Özer
Sat 2	I am very pleased with the MBA.	(2005)
Reliability		
Rel 1	It is reliable to transfer money in the MBA.	Lin (2013)
Rel 2	I can trust that the account information in the MBA is correct.	
Rel 3	It is reliable to pay bills in the MBA.	
Loyalty		
Loy 1	I am committed to the MBA.	Chaudhuri and Holbrook (2001)
Loy 2	I carry out all my banking transactions via the MBA.	Wirtz et al. (2007)

Note: MBA = mobile bank applications.

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